

What is claimed is:

[Claim 1] A high-pressure probe insertion and retraction apparatus comprising:

- a. A conveyance tube having threadable, sealable fixtures at the upper and lower end;
- b. An assortment of included probes designed specifically for threadable, sealable attachment to a fixture at the lower end of the conveyance tube;
- c. A conveyance tube-retaining device mounted to said conveyance tube and compressing a crimped ferrule defining a specific vertical position of the conveyance tube retaining device on the conveyance tube;
- d. A lower generally elongated body for the conveyance tube to pass guidingly and sealably through;
- e. An upper generally elongated body with a drive assembly mounted at the lower end to threadably descend over the threaded upper portion of the lower generally elongated body;
- f. An adapter at the lower end of the lower generally elongated body for threadable and sealable attachment of the lower fixture of the lower generally elongated body, and to the entry valve of the high-pressure vessel or flowline;
- g. A bleed valve component threadably and sealably attached to a port in the lower fixture of the lower generally elongated body giving access to the high-pressure fluids within said lower fixture.

[Claim 2] The apparatus in claim 1, wherein the conveyance tube member of the assembly includes a fixture at the lower end for the attachment of sacrificial probes, chemical injection probes, pneumatic probes, or electronic probes.

[Claim 3] The apparatus in claim 1, wherein a chemical atomizing device designed specifically for the apparatus offers improved chemical atomization and utilization of chemicals.

[Claim 4] The apparatus in claim 1, wherein the conveyance tube member of the assembly includes a fixture at the upper end for attachment and transmission of chemicals, pneumatic signals, electronic signals, or a cap element for use when the conveyance tube is used only for the physical insertion of sacrificial probes.

[Claim 5] The apparatus in claim 1, wherein the upper generally elongated body descends threadably over the upper threaded portion of the lower generally elongated body defining a specific length of travel.

[Claim 6] The apparatus in claim 1, wherein the adapter at the lower end of the lower generally elongated body is threadably and sealingly attached thereto, and can be replaced to accommodate a variety of different diameter and length probes.

[Claim 7] The apparatus in claim 1, wherein the adapter at the lower end of the lower generally elongated body is threadably and sealingly attached thereto, and can be replaced to accommodate a variety of different size and type entry valves.

[Claim 8] The apparatus in claim 1, wherein a bleed valve threadably and sealably attached to a port through the outer wall of the lower fixture of the lower generally elongated body, having access to the high-pressure fluids within said lower fixture, is used to bleed said high-pressure fluids after the retraction process and closure of the high-pressure vessel or flowline entry valve is complete.

[Claim 9] A high-pressure probe insertion and retraction apparatus comprising:

- a. A conveyance tube-retaining device permanently mounted to the conveyance tube by means of the compression and encasement of a crimped ferrule;

- b. A conveyance tube-retaining device separated from the lower wall of the upper cap portion of the upper generally elongated body by a thrust bearing;
- c. A conveyance tube upper fixture permanently mounted to the upper end of the conveyance tube by means of a crimped ferrule that becomes encased with the attachment of transmission lines or a cap element;
- d. A conveyance tube upper fixture separated from the upper wall of the upper cap portion of the upper generally elongated body by a thrust bearing.

[Claim 10] The apparatus in claim 9, wherein a conveyance tube-retaining device compresses a crimped ferrule onto the conveyance tube and defines a specific vertical position of the conveyance tube-retaining device on the conveyance tube.

[Claim 11] The apparatus in claim 9, wherein the conveyance tube-retaining device defines a length of travel of the conveyance tube below the lower fixture of the lower generally elongated body and into the high-pressure vessel or flowline.

[Claim 12] The apparatus in claim 9, wherein the conveyance tube retaining device is located below a thrust bearing that converts clockwise rotational downward vertical force from the upper cap portion of the upper generally elongated body to a non-rotational downward vertical force and to the conveyance tube retaining device permanently attached to the conveyance tube.

[Claim 13] The apparatus in claim 9, wherein the conveyance tube retaining device is located below a thrust bearing that converts a counter-clockwise upward vertical force from the upper cap portion of the upper generally elongated body to a non-rotational upward force applied to the lower wall of the permanently attached upper fixture of the conveyance tube.

[Claim 14] The apparatus in claim 9, wherein vertical travel of the of the upper generally elongated body caused by clockwise or counter-clockwise rotation of said upper generally elongated body is transmitted to the

conveyance tube as a non-rotational force through thrust bearings mounted above and below the upper cap portion of the upper generally elongated body for that purpose.

[Claim 15] A high-pressure probe insertion and retraction apparatus comprising:

- a. A conveyance tube-retaining device permanently mounted to the conveyance tube and located within the space defined by the lower wall of the upper cap portion of the upper generally elongated body, and the upper wall of the threaded upper portion of the lower generally elongated body;
- b. An upper cap portion of the upper generally elongated body having a thrust bearing separating the lower wall of said upper cap portion from the upper wall of the conveyance tube-retaining device;
- c. An upper cap portion of the upper generally elongated body having a thrust bearing separating the upper wall of said upper cap portion from the lower wall of the permanently attached upper fixture of the conveyance tube;
- d. A threaded upper portion of a lower generally elongated body with threadable engagement to the drive assembly located at the lower end of the upper generally elongated body;
- e. An upper threaded portion of the lower generally elongated body having a vertical key slot, and a locking device threadably attached to the drive assembly at the lower end of the upper generally elongated body for engagement of said vertical key slot;
- f. An upper generally elongated body having a knurled section of the outer wall surface.

[Claim 16] The apparatus in claim 15, wherein a clockwise rotation of the upper generally elongated body will result in a vertical downward force on the conveyance tube retaining device, the attached conveyance tube, and cause delivery of the attached probe into the high-pressure vessel or flowline.

[Claim 17] The apparatus in claim 15, wherein a counter clockwise rotation of the upper generally elongated body will result in an upward force on the

conveyance tube retaining device, the attached conveyance tube, and cause delivery of the attached probe from the high-pressure vessel or flowline and into the space defined by the adapter at the lower end of the lower generally elongated body for this purpose.

[Claim 18] The apparatus in claim 15, wherein the drive assembly located at the lower end of the upper generally elongated body comprises a locking device that in the locked position allows a spring loaded pin to rest within a vertical key slot in the upper portion of the lower generally elongated body for that purpose, and prevent further insertion through clockwise rotation of the upper generally elongated body, or further retraction through counter clockwise rotation of the upper generally elongated body.

[Claim 19] The apparatus in claim 15, wherein the drive assembly located at the lower end of the upper generally elongated body comprises a locking device that in the unlocked position prevents a spring loaded pin from engaging a vertical key slot in the upper portion of the lower generally elongated body for that purpose, and allows further insertion through clockwise rotation of the upper generally elongated body, or further retraction through counter clockwise rotation of the upper generally elongated body.

[Claim 20] The apparatus in claim 15, wherein manual rotational manipulation of the upper generally elongated body, comprising a knurled surface on the outer wall for this purpose, is the only required power source to complete the insertion or retraction process.